

## **REMARKS**

With entry of the foregoing amendments, claims 1-15 are pending in the application. Claims 1 and 2 have been amended to clarify the invention's mode of operation as a mechanical pressure between the rotatable surface and the ablative surface. Support for this amendment may be found in the last sentence of Paragraph 34 and in Fig. 2. "The wood chip is pressed against and moved along the ablative surface 20a, where it is rapidly pyrolysed between the front surfaces 28b of blades 28 and the ablative surface 20a in a similar manner to that illustrated in FIG. 2." FIG. 2 clearly illustrates a wood chip mechanically pressed between an ablative surface and the front surface of a moving blade.

Applicants acknowledge the Examiner's withdrawal of previous rejections based on consideration of applicant's arguments filed January 4, 2008.

Claims 1-15 stand variously rejected under 35 U.S.C. §§ 102(e) and 103 (a). Applicants respectfully traverse the rejections, and request that the rejections be reconsidered in view of the foregoing amendments and the following remarks.

### **Rejections Under 35 U.S.C. § 102(e)**

#### **Independent Claims 1 and 2 and Dependent Claims 3-9 and 14-15**

Claims 1-9, and 14-15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by US 6,379,629 B1 to Kanai ("Kanai '629"). To anticipate a claim, a reference must teach every element of the claim:

'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). 'The identical invention must be shown in as complete detail as is contained in the ... claim.' Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

MPEP § 2131.

Kanai '629 discloses nothing more than a carbonizing vessel in which feedstock is rotated within the vessel by rotating vanes and travels away from the center of rotation towards

a heating surface by **centrifugal force**. In one embodiment of Kanai '629, the rotary vane 8 operates to throw or upwardly raise the carbonizing object within the carbonizing vessel 2. Col. 6, lines 7-10. The mode by which Kanai '629 generates contact between the carbonizing object (i.e., feedstock) and heat transmission 6 is clearly through centrifugal force. Kanai '629 states:

In conjunction therewith, associating **with centrifugal force by rotation or direction R of the rotary vane 8, the carbonizing object is depressed onto the heat transmission surface 6** of the carbonizing vessel at a predetermined contacting peripheral speed to form thin film to be depressed onto the heat transmission surface. (Col. 6, lines 10-16; *see, also* Col. 2, lines 5-19) (emphasis added)

In another embodiment of Kanai '629, a spiral rotary vane 50 is rotated such that:

the carbonizing object is **depressed onto the heat transmission surface 6** in thin film form with a predetermined peripheral speed **by centrifugal force** associating with rotation of the spiral rotary vane 50 in the rotating direction R. (Col. 7, lines 20-27.) (emphasis added)

Thus, Kanai '629 relies on nothing more than the centrifugal force created by a rotating vane to depress the carbonizing object onto the heat transmission surface, i.e., the feedstock of Kanai '629 makes contact with the hot surface only by centrifugal force.

In contrast, as recited in claims 1 and 2, as amended, a rotatable surface is positioned relative to the ablative surface **such that feedstock is mechanically pressed between a part of the rotatable surface and that ablative surface** and moved along the ablative surface by the rotatable surface, to thermolyze the feedstock. Thus, a mechanical pressure is applied to the feedstock between the rotatable surface and the ablative surface.

Nowhere does Kanai '629 disclose or suggest pressing of the feedstock into an ablative surface by a rotatable surface. Accordingly, Kanai '629 neither anticipates nor renders obvious claims 1 and 2.

Claims 3-9, and 14-15 depend from allowable claims 1 and 2, and therefore, should be allowable. Claims 3-9 and 14-15 may also recite additional patentable subject matter for reasons not explicitly disclosed herein. These claims are also not anticipated or rendered obvious by Kanai, and allowance of same is earnestly solicited.

#### **Rejections under 35 U.S.C. § 103(a)**

##### **Dependent Claims 10-12**

Claims 10-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanai '629. Claims 10-12 depend directly or indirectly on allowable claim 1. In light of the above arguments and amendment with respect to the rejection under § 102(e), these claims are also allowable. The present inventors have found that the pressing of feedstock between the rotatable surface and the ablative surface, combined with the movement of the feedstock along with the ablative surface, provides a surprisingly efficient thermolysis system. The prolonged pressing of the feedstock onto the ablative surface by the rotatable blades ensures an effective and efficient transfer of heat from the ablative surface to the feedstock. Claims 10 and 12 are directed to an adjustment mechanism that allows the rotatable surface to be optimized for pressing the material to be ablated against the ablative surface. There is simply no teaching or suggestion that the pressing of feedstock in this manner would lead to an advantageous reactor structure as a whole, nor that the rotatable surface can be optimized for pressing as recited in claims 10-12.

##### **Dependent Claim 13**

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanai '629 as applied to claim 1, and further in view of U.S. 5,586,396 to Kanai ("Kanai '369"). Kanai '369 also appears to disclose nothing more than a drying vessel with rotating vanes to mix the feedstock of the vessel. Moreover, the rotating vanes have a clearance between the side walls and rotating surfaces, which prevents any mechanical pressing between the rotating surface and heated surface. Neither of Kanai '629 nor Kanai '396 disclose pressing and moving of the feedstock along the ablative surface by the rotatable blades. Accordingly, there is no teaching or suggestion to the skilled person based on either Kanai references to modify the disclosure of either of those documents to reach the reactor structure recited in claims 13.

**CONCLUSION**

Applicant respectfully submits that all pending claims are in condition for allowance. Favorable consideration and allowance of claims 1-15 are therefore respectfully requested. The Examiner is urged to contact the undersigned at the number noted below, should any issues remain.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Teresa J. Welch', with a long horizontal flourish extending to the right.

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